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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/675,832

09/30/2003

James Mac Freitag

HSJ9-2003-0070US1

6643

7590

03/06/2006

ATTN: John J. Oskorep  
One Magnificent Mile Center  
Suite 1400  
980 N. Michigan Avenue  
Chicago, IL 60611

EXAMINER

CAO, ALLEN T

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/675,832

Applicant(s)

FREITAG ET AL.

Examiner

Allen T. Cao

Art Unit

2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 and 25-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

1. Claims 26-28 are objected to because of the following informalities: The term "structure" in claims 26-28 should be deleted. Appropriate correction is required.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, 7-8, 10, 12-14, 16, 19, 22-23 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Pinarbasi (US. 6,226,159 B1).

Pinarbasi ('159), particularly figure 12, discloses a disk drive having a housing; a magnetic disk; a magnetic assembly; a support mounted in the housing as set forth in claim 12; a spindle motor; an actuator positioning means; a processor (all see figures 1-5); wherein, the magnetic head assembly including a read head which including a spin valve sensor structure 200 comprising: a free layer structure 206; an antiparallel self-pinned layer structure 204; a non magnetic electrically conductive spacer 202 in between the free layer and the AP structure; the AP "self" pinned layer structure having: a first AP pinned layer (210, AP1); a second AP pinned layer (212, AP2); an antiparallel coupling (APC) layer 208 formed between the first and the second AP pinned layers; and at least one of the first and second AP pinned layers comprising a cobalt layer and including no iron content (see figure 12 and column 6, lines 11- 19), all as set forth in claims 1 and 12.

Regarding claim 23, all of the methods steps as claimed are inherently disclosed by Pinarbasi ('159).

Regarding claims 2-3, 5, 13-14, 16 and 25, Pinarbasi ('159) discloses that the AP pinned layers (figure 12) are consisting of Co.

Regarding claims 7-8, 10, 19 and 22, Pinarbasi ('159) inherently discloses that the pinned structure is pinned by its magnetostriction and air bearing surface stress and the magnetoresistive coefficient of the spin valve structure sensor and a magnetostriction of the pinned layers are increased form use of the cobalt (column 6, lines 20-26 and 36-43).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 6, 15, 17 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi ('159) in view of Gill (Us. 6,356,419 B1).

Pinarbasi ('159) does not disclose that the other AP pinned layer comprises a cobalt-iron as recited in claims 4, 6, 15, 17 and 26-28.

Gill ('419) (particularly figure 15) discloses a spin valve sensor having a AP pinned structure 502 including a first AP1 pinned layer 406 "comprising" Co with no Iron and a second AP2 pinned layer 504 "comprises" CoFe.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to manufacture the pinned layers of Pinarbasi ('159) with such materials as set forth, supra as taught by Gill ('419) to improve magnetostrictions of the pinned layers and magnetoresistive coefficient of the spin valve sensor, thus improve read characteristics of the head.

6. Claims 9, 20, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi ('159) in view of Gill ('338).

Pinarbasi ('159) does not explicitly disclose that the pinned layer is self pinned as claimed.

Gill ('338) discloses a spin valve sensor having AP1 60a and AP2 60b can be self pinned or pinned with an optional AFM layer 58.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to indicate/modify the pinned layers of Pinarbasi ('159) are self pinned (with an optional AFM layer) as taught by Gill ('338).

The rationale is as follows: One of ordinary skill in the art would have been motivated to indicate/modify the pinned layers of Pinarbasi ('159) are self pinned (with an optional AFM layer) as taught by Gill ('338) to reduce the read back signal, thus reduce noises in order to improve read characteristics of the head.

7. Claims 11, 18, 21 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi ('159) in view of Ooshima (US. 6,888,706 B2).

Pinarbasi neither discloses that free layer is made of CoFe nor that the seed layer has a thickness of less than 70 Angstroms.

Ooshima discloses a spin valve sensor having a free layer 105 made of CoFe and a seed layer 25 has a thickness of less than 50 Angstroms.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the seed and the free layer of Pinarbasi ('159) having such limitations as set forth, supra as taught by Ooshima through an obvious engineering routine choices in order to improve the read characteristics.

Pinarbasi as modified by Ooshima neither discloses that the seed layer is made of PtMn.

It also would have been obvious to manufacture the seed layer of Pinarbasi as modified by Ooshima with PtMn material through an obvious choices of well known material in order to provide a better read head.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen T. Cao whose telephone number is (571) 272-7569. The examiner can normally be reached on Mon - Thurs (7:30 - 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2652

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Allen Cao', with a long horizontal flourish extending to the right.

Allen Cao  
Primary Examiner

AC  
February 28, 2006